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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,807	10/26/2000	Shinichiro Matsuo	FUJG 17.913	3631
26304	7590	11/17/2004	EXAMINER	
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NEW YORK, NY 10022-2585			PAPER NUMBER	

2664

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/696,807

Applicant(s)

MATSUO, SHINICHIRO

Examiner

Chirag G Shah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Newly replacement drawings of figures 2 and 10 received on 7/21/04 are accepted by the Examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 rejected under 35 U.S.C. 102(e) as being anticipated by Chiussi et al. (U.S. Patent No. 6,075,791).

Referring to claim 1, Chiussi et al. discloses in figure 7 and claim 5 and respective portions of the specification of a communications link interface 1500 (relay apparatus) comprising: packet receiving unit (1010) for receiving an input packet; data length detecting unit for detecting the data length of the packet received by the receiving unit (as disclosed in column 10, lines 10-30 that for each packet, the receiver 1010 also determines the length of each received packet using length information contained in the header); time interval detecting unit for detecting the communication time interval of the packet received by said packet receiving unit (a timestamp register 1050-I, used to store the timestamp of connection I); and band setting

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unit (server 1100) for setting the communication band of a channel for sending out the packet received by said packet receiving unit (via transmitter 1200), based on the data length detected by said data length detecting unit and the communication time interval detected by said time interval detecting unit as claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2 and 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiussi et al. (6,075,791) in view Chiussi et al (U.S. Patent No. 6,654,345).

Referring to claims 2, (6,075,791) discloses in column 10, lines 55 to column 12 lines 27 of band setting unit calculations (server 1100 determines the system potential function each time a transmission is completed and computes the system potential function every time the kth packet arrives at the head of connection queue). (6,075,791) fails to explicitly disclose of calculating said communication band by dividing the total value of said data lengths for a predetermined number of packets by the total value of said communication time intervals for them. (6,654,345) discloses in claims 1 and 2 and in column 5, lines 13, to column 6, lines 32 and respective portions of the specification of the server (band setting unit) in the packet network that calculates and schedules the band that uses all available bandwidth for subsequent service based on m timeslots available as claim. Therefore, it would have been obvious to one of

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ordinary skill in the art to modify the teachings of 6,075,791 to include the teachings calculation band setting based on $\text{total length} / \text{time} = \text{timeslot}$ as (6,654,345) in order to provide fairness scheduling of bandwidth availability.

Referring to claims 3, (6,075,791) discloses in column 10, lines 55 to column 12 lines 27 of band setting unit calculations (server 1100 determines the system potential function each time a transmission is completed and computes the system potential function every time the kth packet arrives at the head of connection queue). (6,075,791) fails to explicitly disclose of calculating said communication band by multiplying the total value of the data lengths for the predetermined number of packets divided by the total value of communication time intervals for them by a predetermined value of less than 1. (6,654,345) discloses in claims 1 and 2 and in column 5, lines 13, to column 6, lines 32 and respective portions of the specification of the server (band setting unit) in the packet network that calculates and schedules the band that uses all available bandwidth for subsequent service based on m timeslots available as claim. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of 6,075,791 to include the teachings calculation band setting based on $\text{total length} / \text{time} = \text{timeslot}$ as (6,654,345) in order to provide fairness scheduling of bandwidth availability.

Claims 4-7 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiussi et al. (6,075,791) in view Marin et al. (U.S. Patent No. 6,088,734).

Referring to claim 4 and 5, Chiussi et al. discloses in figure 7 of the relay apparatus according to claim 1, wherein the receiver receives a first packet and a second packet without disclosing priority of QoS, thus indicating that the packets are mingled in the packet receiver unit having high and low priorities. Chiussi et al also discloses that band setting is based on the data

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length and communication time interval as disclosed in figures 7 and claim 5 and respective portions of the specification. Chiussi, however, fails to explicitly disclose that band setting unit sets the communication band based on the data length and the communication time interval corresponding to the first packet requiring a high service quality. Furthermore, Chiussi fails to disclose of the first packet having strict requirement for real time and second packet have less strict requirement for real time low priority. Marin et al discloses in claims 1, 2 and 7 that as each cell is received by the ATM node (relay unit), the cells are groups based on timestamp and based on priority (high or low) buffers. In other words, upon receiving the cell, a determination is made whether the cell is high or low priority. Furthermore, the high priority packet from the FIFO buffer is extracted and scheduled for band setting prior to the low priority cell. In addition the first packet is an IP packet that conforms to the real time transport protocol as disclosed in figure 1 and in column 12, lines 31-42. Therefore, it would have been obvious to one of ordinary skill in the art to include in the algorithm of scheduling based on priority (level) as taught by Marin into Chiussi's invention in order to efficiently schedule critical data for transmission with priority.

Referring to claims 6, Chiussi discloses in figure 7 and respective portions of the specification that the relay apparatus according to claim 4, wherein the first packet is an IP packet conforming with the real time transport protocol since it is disclosed in column 10, lines 10-30 that for each packet, the receiver 1010 also determines the length of each received packet using length information contained in the header as claims.

Referring to claim 7, Chiussi disclose the relay apparatus in figure 7 according to claim 6, wherein said data length detecting unit detects the data length based on the total length

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contained in an IP header of the IP packet (as disclosed in column 10, lines 10-30 that for each packet, the receiver 1010 also determines the length of each received packet using length information contained in the header), and said time interval detecting unit detects the communication time interval based on a time stamp contained in a real time transport protocol message of the IP packet (a timestamp register 1050-I, used to store the timestamp of connection I) as claim.

5. Claims 8-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiussi et al. in view of Marin et al. as applied to claims 4-7 above, and further in view of Gemar et al. (U.S. Patent No. 6,483,839).

Referring to claim 8, Chiussi in view of Marin teaches of setting communication band based on priority, data length and packet receiving unit and of sorting for scheduling packets in an ATM network received by the packet receiving unit. Chiussi in view of Marin fails to explicitly disclose ATM output control unit for outputting the ATM cells segmented by said cell segmentation unit to an ATM connection as the channel, and switch control unit for controlling said ATM output control unit to output preferentially the ATM cells corresponding to the first packet, when the ATM cells corresponding to the first and second packets are mingled and input into said ATM output control unit. Gemar et al. also discloses in figure 1 and respective portion of the specification of the relay apparatus comprising cell segmentation unit 46 for segmenting the first and second packets received by said packet receiving into the ATM cells. Gemar further discloses in column 6, lines 40-55 of outputting the ATM cells segmented by cell segmentation unit 46 into a transmit FIFO memory 500. The data cells are transmitted from FIFO memory

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50 to line 32 (channel) and then to ATM network 30. Therefore, it would have been obvious to include the teachings of Gemar et al. into Chiussi in view of Marin's invention to ensure capability allowing scheduler customization and control for outputting various modes of traffic.

Referring to claim 9, Chiussi in view of Marin fails to disclose that the ATM connection has a service category set in GFR, and said switch control unit has a minimum cell rate corresponding to the ATM connection set by said band setting unit. Gemar et al. discloses in column 4, lines 36-45 of the scheduler providing GFR, thus, each session is guaranteed a minimum rate of service while fairly sharing excess bandwidth and providing global maximum rate. Therefore, it would have been obvious to one of ordinary skill in the art to include GFR as taught by Gemar et al. into Chiussi in view of Marin's invention in order to ensure minimum cell rate for entire frames of data, not just cells of data and to further ensure that communication time is not wasted because only portions of the frames are communicated.

Referring to claim 10, Chiussi in view of Marin fails to explicitly teach that the relay apparatus according to claim 8, wherein said ATM connection has a service category set in VBR, and said switch control unit sets an average cell rate corresponding to the ATM connection by said band setting unit. Gemar et al discloses in column 4, lines 46 to column 5, lines 14 and in claim 2 of a service category set in VBR, and the scheduler sets average cell rate and processes the slots. Therefore, it would have been obvious to one of ordinary skill in the art to include VBR as taught by Gemar et al. into Chiussi in view of Marin's invention in order to appropriately supply and maximize the effectiveness of the transmission of multiple modes of traffic on the network.

Referring to claim 11, Chiussi discloses in the abstract and in claims 7 and 8 that the band setting unit repetitively sets the communication band at predetermined timings, after the virtual connection is set as the channel (scheduler generates and maintains queue timestamps and queue bits and virtual connection bits based on whether the rates queues and the connections are backlogged, in other words, the relay apparatus sequentially selects each connection satisfying the predetermined criterion for each subsequent timeslot. Chiussi in view of Chiussi fails to disclose: band setting unit sets the communication band, when a permanent virtual connection is set as the channel and band setting unit sets the communication band, when a switch type virtual connection is set as the channel; band setting unit sets the communication band when a call setup is made in accordance with an upper-level layer protocol that is higher than a hierarchy corresponding to the packet, after the virtual connection is set as the channel. Gemar et al. discloses that the ATM system transfers the data cells or units across the ATM system via connections or channel and connections may be classified as SVC or PVC and further discloses in column 4, that the scheduler (band setting unit) schedules a plurality of connections (SVC or PVC) from the at least one tunnel entry to select a connection for eventual transmission. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Chiussi in view of to include the teachings of Gemar in order to efficiently schedule band and traffic for multiple connection types.

6. Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Gerszberg et al. (U.S. Patent No. 6,307,839), hereinafter Gerszberg in view of Jurkevich et al (U.S. Patent No. 5,229,992), hereinafter Jurkevich.

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Gerzberg discloses in figure 1 and column 15, lines 45 to column 16, lines 30 of a relay apparatus (processor) using a fixed length packet in an ATM switching network,

Gerzberg discloses wherein a first IP packet having a strict requirement for real time, and a second IP packet having a less strict requirement for real time are both allocated to a communication band, the communication band being allocated based on data length and a communication time interval corresponding to the first packet [as disclosed in figure 6A, 6B, and column 15, lines 45 to column 16, lines 30, the first IP packet is a voice packet and the second IP packet is a data packet, prior to incoming call, all 1 Mbps may be completely used for the data transmission, however, the 64Kbps channel allocates the voice call as soon as a voice call comes in since voice has a higher priority than data. Furthermore, where individual packets are used to transport voice and data, voice packets are simply given priority over data slots in the frame and thus, the silent periods are used for data. The Allocation is based on time interval of how long the voice packet lasts and upon termination of the voice call, the remaining bandwidth is utilized by low priority data length]. Gerzberg discloses in figure 1 of utilizing ATM packets using a fixed length packet, however fails to explicitly disclose that the relay apparatus transmits variable length data in a fixed length packet. Jurkevich discloses in the abstract of variable sized data being assembled within a preset fixed time interval. Jurkevich further discloses in col. 3, lines 1-35 discloses of utilizing variable size packets or frames having fixed size channels, and a scheme by which frames may be compressed to conserve bandwidth. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Gerszberg to include variable length data using a fixed length packet in order to conserve bandwidth and enhancing throughput performance.

Response to Arguments

7. Applicant's arguments filed 7/21/04 have been fully considered but they are not persuasive.

Referring to claim 1, Applicant argues the Chiussi '791 fails to disclose or suggest a band setting unit for setting the communication band of a channel based on a data length detected by a data length detecting unit and a communication time interval detected by time interval detecting unit. Examiner respectfully disagrees and redirects applicant's attention to Chiussi reference '791, specifically in figure 7, associated section which include column 10, lines 7 to column 11, lines 19, where Chiussi discloses of a server 1100 which sets a communication band of a channel for sending out the packet received by the packet receiving unit 1010, based on the data length detected by the length detector in the receiving unit (as disclosed in column 10, lines 10-30 that for each packet, the receiver 1010 also determines the length of each received packet using length information contained in the header and for each packet, the receiver 1010 also determines whether or not the packet can be queued to connection queue 1020-I, if the received packet can be queued, server 1100 then increment the queue length register 1060-I). For each connection I of a plurality of switched connections 1 through n, the communication link interface (reply apparatus) includes: a connection queue, a packet length queue, a connection identifier, and a timestamp register used to store the time stamp of connection I. Thus, each time transmitter 1200 becomes available for transmission of, the server 1100, sets a communication band of a channel by selecting (based on packet data length and timestamp of packet among

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other factors described above) a data packet among all the packets waiting at the head of the queues associated with all the connection that are back logged at the time of such availability and sends (via the communication band of channel) the selected packet to transmitter. Therefore, Chiussi does disclose/suggest in figure 7, the communication link interface (reply apparatus) includes a server 1100, that set the communication band of a channel for sending out the packet received by packet receiving unit 1010, based on the data length detected and time interval detected. Thus, claim 1 stands rejected as being anticipated by Chiussi '791.

8. Applicant's arguments with respect to claim 15 have been considered but are moot in view of the new ground(s) of rejection.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any response to this final action should be mailed to:

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Or faxed to:

(703)305-9051, (for formal communications; please mark "EXPEDITED
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Or:

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or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal
Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Chirag G Shah whose telephone number is 571-272-3144. The
examiner can normally be reached on M-F 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the
organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent
Application Information Retrieval (PAIR) system. Status information for published applications
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cgs
September 20, 2004


Ajit Patel
Primary Examiner